Remarks

Reconsideration of remaining claims 1, 2, 5, 9-11, 13-18 and 20-23 3 is respectfully requested.

In the Office action dated December 8, 2006, the Examiner withdrew the allowability of pending claims 16, 17 and 20-22 (based upon newly-discovered references) and objected to both the drawings and claims 1, 11 and 14. The Examiner further rejected all pending claims under one or more of 35 USC §§ 101, 112 second paragraph, 102(b) and 103(a). The Examiner's objections and rejections will be discussed below in the order appearing in the Office action.

Drawing Objections

The Examiner first objected to the drawings as failing to show the polarizer and polarizing beam splitter of claims 3 and 4. Inasmuch as claims 3 and 4 have been cancelled from this application, the Examiner's objection is now moot.

Claim Objections

Claims 1, 3, 4, 14-18 and 20-23 were first objected to by the Examiner as using the language "consisting of" – defined as excluding any element, step, or ingredient not specified in the claim. In response, applicants have amended claims 1, 14-18 and 20-23 to more accurately define the invention as "*comprising*" various elements and/or steps. Inasmuch as claims 3 and 4 have been cancelled, the Examiner's objection is now considered as fully met.

The Examiner separately objected to claim 11 with respect to the phrase "continuum lightwave source", suggesting instead that the phrase should be "*continuous* lightwave source". In response, applicants assert that the term continuum is proper, and draws the Examiner's attention to paragraphs 36 and 47, describing the utilization of a "continuum" source (where the term "continuum" is a known term of art associated with the use of a broadband source). Applicants thus believe that claim 11 is proper in its current form and respectfully request the Examiner to reconsider this objection.

35 USC § 101 - Rejection - Claims 15-18 and 20-23

Claims 15-18 and 20-23 were rejected by the Examiner under 35 USC 101 as being directed to non-statutory subject matter. Applicants believe that the Examiner intended to include independent claim 14 in this rejection.

In particular, the Examiner cited the final step of claim 14, directed to "applying a fast Fourier transform to the interference pattern" as not providing a physical transformation and/or a useful, concrete and tangible result. In response, applicants have amended independent claim 14 to include the concluding step of "determining the thickness of said separate layers" – thus providing a "tangible result". Remaining dependent claims 15-18 and 20-23 have likewise been amended to determine thicknesses, generating output signals, and the like. With these amendments, applicants believe that the Examiner's rejections under 35 USC 101 have been fully addressed and respectfully request the Examiner to reconsider this rejection and find the amended claims to be in condition for allowance.

35 USC § 112, second paragraph Rejection – Claims 6-8

The Examiner next rejected claims 6-8 under 35 USC 112, second paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter of the present invention. Applicants have addressed this rejection by canceling claims 6-8 from this application.

35 USC § 102(b) Rejection - Claims 1, 2, 9-11 and 13

The Examiner next rejected claims 1, 2, 9-11 and 13 under 35 USC 102(b) as being "anticipated" by US Patent 5,341,205 (McLandrich et al.). Within this rejection, the Examiner cited the "optical spectrometer" teaching of McLandrich et al. as teaching the principle of: "providing a spectrogram signal of the plurality of interfering reflected signals and generating a fast Fourier transform of the spectrogram associated with the optical path length of the measured object, where signal peaks within the fast Fourier

transform are related to transition interfaces between materials in the optically transparent object and are associated with the predetermined characteristics of the optically transparent object". The Examiner further states that the claim limitations are found in interference spectrometer 11 and the computer 28 of McLandrich et al., since these elements are "capable of performing the claimed functions". In response, applicants have amended independent claim 1 to define the final element of the arrangement as an "optical Fourier transform device" – which is considered to be distinct and different from the Michelson interferometer 11 of McLandrich et al.

Applicants assert that there is no discussion or suggestion of utilizing a fast Fourier transform process/arrangement in McLandrich et al. to determine "characteristics" of an optical device as defined by the amended claims. Indeed, within the rejection of claim 14, the Examiner states that "McLandrich et al. fail to teach ... the use of a fast Fourier transform to determine the thickness of separate layers". An important aspect of providing the optical fast Fourier transform is the utilization of a broadband (continuum) light source. The source of McLandrich et al. cited by the Examiner is not a "broadband" source, but is instead a "partial coherence source". Thus, applicants assert that McLandrich et al. cannot be found to "anticipate" the subject matter of the present invention, and respectfully request the Examiner to reconsider this rejection and find claims 1, 2, 9-11 and 13 to be in condition for allowance.

35 USC § 103(a) Rejection - Claims 3-8

The Examiner next rejected claims 3-8 under 35 USC 103(a) as being unpatentable over McLandrich et al. (as applied to claim 1, above) in combination with other references. Claims 3, 4, and 6-8 have been cancelled from this application. Claim 5 remains, where the Examiner has taken Official Notice of the additional teaching defined within claim 5. Regardless of the Examiner's taking of Official Notice, applicants assert that McLandrich et al. lacks the basic teaching of generating a fast Fourier transform and using the information in the FFT to determine characteristics, such as layer thickness, within an optical device/fiber. Applicants thus respectfully request the

Examiner to reconsider this rejection and find claims 3-8, as depending from amended claim 1, to now be in condition for allowance.

35 USC § 103(a) Rejection – Claims 14-18 and 20-23

Lastly, the Examiner rejected pending claims 14-18 and 20-23 under 35 USC 103(a) as being unpatentable over McLandrich et al. (for the reasons discussed above), when considered with one or more secondary references. With respect to independent claim 14, the Examiner cited US Patent 5,440,141 (Horie) as teaching the use of a fast Fourier transform to determine the thickness of separate layers within an optical structure. The Horie reference, at column 11, describes a method of determining layer thickness by measuring the height of a single peak, and then dividing this value by the average refractive index to determine thickness.

In contrast, and as defined by amended claim 14, it has been found that the thickness of various layers can be ascertained by measuring the separation between adjacent peaks in the transform signal. There is no teaching or assertion of this method in either McLandrich et al. or Horie. Thus, applicants assert that McLandrich et al, with any of the various secondary references, cannot be found to render obvious the teachings of independent claim 14, or any of the remaining dependent claims 15-18 and 2-23.

With respect to the Examiner's new citation to US Patent 4,168,907 (Presby) as teaching, in association with McLandrich et al., the subject matter of claim 16, applicants cannot agree. The cited Presby reference is directed to utilizing a complete 360° rotation of the "fiber under test" in order to ascertain the location of certain defects. The Presby reference utilizes direct transverse illumination of a fiber, with the projection of the direct illumination used to find any defects, eccentricities. In contrast, the teaching of the present invention as defined by claim 16 utilizes a "pair" of measurements, 90° apart, to determine the amount of eccentricity that may be present between the optical fiber and the outer coating layer. Presby contains no such teaching.

In light of the above, applicants respectfully request the Examiner to reconsider amended independent claim 14 in light of the cited references and now find these claims to be in condition for allowance.

Applicants believe that the case, in its present form, is now in condition for allowance and respectfully request an early and favorable response from the Examiner in that regard. If for some reason the Examiner does not agree that the case is ready to issue and that an interview or telephone conversation would further the prosecution, the Examiner is invited to contact applicant's attorney at the telephone number listed below.

Respectfully submitted,

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Date: 3/8/07